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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/640,703	08/18/2000	Je Hong Kim	2658-0203P	6489

2292 7590 05/22/2003

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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/640,703

Applicant(s)

KIM, JE HONG

Examiner

Thoi V Duong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-17 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment, Paper No. 7, filed February 27, 2003.

Accordingly, claims 1, 4 and 11 were amended, and claims 2 and 18 were cancelled. Currently, claims 1, 3-17, and 19-21 are pending in this application.

Claim Objections

2. Claims 3 and 4 are objected to because of the following informalities: claims 3 and 4 should be dependent on claim 1 instead of claim 2 which was cancelled. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, 7, 11-13 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurematsu et al. (USPN 5,816,677).

As shown in Figs. 1, 2 and 14, Kurematsu et al. discloses a back light unit B in a liquid crystal display P including a lamp 1 generating a light, and a light input having a lamp housing 2 for housing the lamp and reflecting the light, said unit comprising:

a light-guide plate S including a transmission member 11 having a cone pattern 12 (such as circles, ellipses, squares, rectangles, trapezoids, etc...) which would allow

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the light to be uniformly distributed out of the upper surface of the light-guide plate (col. 4, lines 55-60);

a light-path converter 31 placed above said light-guide plate to control a progress direction of the light in such a manner that the light outputted from the light-guide plate is progressed in a direction perpendicular to a liquid crystal panel (col. 12, lines 20-30);

a reflective plate 10 placed below said light-guide plate; and

a diffusion sheet (not shown) disposed above said light-path converter for diffusing the light passing through the light path converter into the liquid crystal panel (col. 12, lines 44-54),

wherein the cone pattern is formed on an upper surface of the light-guide plate;

wherein spacings 13 of cones of the code pattern is controlled to correspond to a distribution of the light (see Fig. 1 and col. 2, lines 43-51);

wherein a density of said cones are such that said light exiting from said light-guide is uniformly distributed and said cones are more densely populated around partially dark areas of said light-guide (see Fig. 1 and col. 2, lines 43-51);

wherein said density of cones increases as a distance from said lamp increases (see Fig. 1 and col. 2, lines 43-51); and

wherein the light converter is a backward prism sheet having a desired between angle (col. 13, lines 40-46).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurematsu et al. (USPN 5,816,677) in view of Rudisill et al. (USPN 5,339,179).

Kurematsu et al. discloses a back light unit that is basically the same as that recited in claims 3 and 4 except for dimensions of a cone of the cone pattern. As shown in Fig. 4, Rudisill et al. discloses a back light unit comprising pits 58 (as cone pattern) formed on a top surface of the backlight unit (see also Figs. 1-3) for enhancing reflectivity over a range of viewing angles (col. 2, lines 24-42), wherein a diameter of the pits ranges from 250 to 1270 micrometers and a vertical angle of the pits ranges from 60° to 150° according to the side wall angle of the pits (col. 6, lines 19-37). Accordingly, if the vertical angle and the diameter of the pits are 90° and 400 micrometers respectively, the height of the pits will be 200 micrometers. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the back light unit of Kurematsu et al. with the teaching of Rudisill et al. by forming a cone pattern having a vertical angle, a diameter and a height of a cone of the cone pattern with a proper dimension to enhance reflectivity over a range of viewing angles and hence to improve display brightness.

7. Claims 6, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurematsu et al. (USPN 5,816,677) in view of Ohara et al. (USPN 5,844,720).

Kurematsu et al. discloses a back light unit that is basically the same as that recited in claims 6, 13 and 14 except that the light-path converter is not a forward prism

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sheet having a vertical angle ranging from about 90° to 130° . As shown in Figs. 1 and 2, Ohara et al. discloses a back light unit 50 for a liquid crystal display comprising a forward prism sheet disposed on top of a light-guide plate 6 and having a vertical angle ranging from 70° to 110° (col. 3, lines 27-48) for improvement in display brightness (col. 3, lines 28-30). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the back light unit of Kurematsu et al. with the teaching of Ohara et al. by employing a forward prism sheet having a proper vertical angle to improve the display brightness.

8. Claims 8, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurematsu et al. (USPN 5,816,677) in view of Yokoyama et al. (USPN 5,899,552).

Kurematsu et al. discloses a back light unit that is basically the same as that recited in claims 8, 13, 15 and 16 except that the vertical angle of the prism is not above about 100° . As shown in Fig. 19, Yokoyama et al. discloses a back light unit BL for producing a uniform and bright illuminating light (col. 4, lines 64-67), comprising a backward prism 7 placed above a light-guide plate 61, wherein the prism has a vertical angle from 80° to 120° (col. 32, lines 51-55 and col. 35, lines 23-58). Accordingly, a desired between angle of the backward prism sheet is well within 45° . Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the back light unit of Kurematsu et al. with the teaching of Yokoyama et al. by employing a backward prism as a light-path converter having a

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vertical angle of above about 100° so as to obtain a bright and uniform image for the display.

9. Claims 9, 10, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurematsu et al. (USPN 5,816,677) in view of Yang (USPN 6,480,307 B1).

Kurematsu et al. discloses a back light unit that is basically the same as that recited in claims 9, 10, 13 and 17 except that the light-path converter is not a hologram sheet having a pattern and a shape that are controlled to correspond to an output angle of light exiting from said light-guide. As shown in Figs. 33, 8A-8D and 9A-9B, Yang discloses a back light unit to provide more energy efficiency and uniform illumination (col. 3, lines 21-24), comprising a hologram sheet 55 placed above a light-guide plate 52, wherein a space and a shape of the hologram pattern are controlled to correspond to an output angle of the light exiting from the light-guide (col. 7, lines 16-53 and col. 13, lines 54-64). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the back light unit of Kurematsu et al. with the teaching of Yang by forming a hologram sheet as a light-path converter having a pattern and a shape that are controlled to correspond to an output angle of light exiting from the light-guide plate so as to obtain a uniform light intensity distribution for the display.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

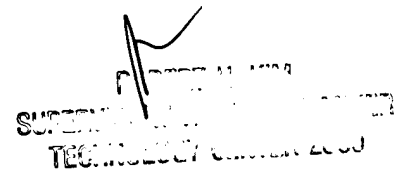
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong



05/18/2003



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